STEM Committee Meeting Minutes

Ohio Department of Education
25 South Front Street,
Columbus, OH 43215
Conference Room 102
Feb 6, 2018

A meeting of the STEM Designation Committee established in Ohio Revised Code 3326.02 was held on Feb 6, 2018, at 9:30 a.m. at the offices of the Ohio Department of Education.

Committee members in attendance:

- Dr. Tom Schwieterman (Chair), VP, Clinical Affairs and Chief Medical Officer, Midmark Corporation, Appointed by the Ohio Senate.
- Mr. Paolo DeMaria, Superintendent of Public Instruction, Ohio Department of Education (second half of meeting);
- Dr. Jessica Mercerhill, Senior Director of Educator Preparation, Ohio Department of Higher Education (designee for John Carey).

Not present:

- Mr. Stephen Lyons, EVP, The Columbus Partnership, Appointed by the Ohio House of Representatives.
- Mr. Matt Peters, Assistant Director, Ohio Development Services Agency (designee for David Goodman);

Also present were:

- David Burns, Director, Battelle STEM Innovation Networks - Ohio STEM Learning Network;
- Buddy Harris, Director, Office of Innovation, Ohio Department of Education;
- Holly Lavender, STEM Education Lead, Ohio Department of Education;
- Kerry Dixon, Beta by Design;
- Kelly Gaier-Evans, Battelle Education;
- Dustin Pyles, Vaza Consulting;
- Chelsey Cook Kohn, John Marshall IT High School;
- Tim Sisson, Cleveland Metro Schools;
- Jana Fornario, Office of the Governor;
- Kelli Shrewsberry, Teaching and Learning Collaborative;
- Leslie Kelly, Columbus City Schools;
- Nigamanth Sridhar, Cleveland State University;
- Jake Taylor, TEALS;
- Lisa Chambers, Tech Corps;
- Debbie Jackson, Cleveland State University;
- Greg Stone, Dayton Business Technology HS

I. Call to order:

Dr. Tom Schwieterman called the meeting to order at 9:36 a.m.
Minutes were recorded by Holly Lavender.

II. Welcome and introductions:

Dr. Tom Schwieterman welcomed all attendees, and the committee members introduced themselves. Buddy Harris provided a brief overview of the meeting.

III. Approval of minutes:

Minutes from the Sept 29, 2017, meeting were sent to committee for review prior to the meeting. Dr. Jessica Mercerhill moved to **Approve** the minutes from the Sept 29, 2017, meeting of the STEM Committee, seconded by Mr. Paolo DeMaria. (Note: Minutes were approved in the second half of the meeting after Mr. DeMaria arrived.)
The **motion carried**.

IV. Review of Linden McKinley progress toward meeting conditions for approval:

David Burns from the Ohio STEM Learning Network (OSLN) provided an update on the progress of Linden McKinley in meeting conditions for full approval of designation. OSLN met with the school in the fall, and they were in the process of hiring a curriculum specialist. Mr. Burns suggested that a site visit be made to the school as part of the final recommendation on whether the school has met the conditions for continued designation.
Mr. Burns also noted that OSLN site visits for all the schools approved with conditions (St. Ambrose, Hull Prairie Intermediate, Canal Winchester Middle School, and Ranger High Tech Academy) were completed at the March meeting have also been completed. He recommended moving forward with a final recommendation regarding continued designation at the next meeting.

V. Updates to the STEM/STEAM school application and process

Holly Lavender shared a brief reminder of the timeline for the 2018 application review process. Schools are to submit their proposals to the Department by 5:00 p.m., March 2, after which the Office of Innovation will forward the proposals to OSLN and to the committee the following week. Applicants will use one application, and will indicate whether the proposal is for a STEM or STEAM school. The application format has been updated to streamline the process and to reflect the descriptors in the Quality Model for STEM and STEAM Schools. Proposals for STEAM designation must demonstrate a curriculum with arts integration, an arts integration specialist on the curriculum team, and arts organizations included as partners. A STEAM school is a type of STEM school, but a school is designated as STEM or STEAM.

VI. Guest Presentation – STEAM: Creative Minds Through the Arts

Dr. Kerry Dixon of Beta by Design spoke to the committee about STEAM - integrating the arts as a pedagogical method, and interdisciplinary thinking. She remarked that when students are presented with overly-structured problems, it may be hard to tell if interdisciplinary thinking is actually achieved. Loosely structured problems, on the other hand, allow space for personal expression, so that the problem becomes more than just an exercise. She stated that there is no silver bullet for arts integration, but gave a few examples of how it could be done. One example included a visualization of DNA/RNA replication, using color codes (vs letter codes) to develop a conceptual understanding and to help students visualize the process. Dr. Dixon suggested that putting more emphasis on the *process* can be very helpful when integrating STEM and the arts.
Dr. Robin VandeZande of Kent State University spoke to the committee about integrating the arts and STEM through design thinking. The U.S. has become very interested in design: object (product) design, environmental design (architecture and city planning), communication design (graphics and

advertisements), and experiential design (when a user becomes part of the design). Many design activities are innate (e.g., what we wear). The design process forms the basis for design thinking (a form of creative problem solving), in which the "designers" (students) define and investigate a problem, develop ideas and prototypes for possible solutions, and present solutions to an authentic audience. Design thinking puts additional emphasis on aesthetics and specific preferences of the end users. Dr. VandeZande also spoke about the importance of teamwork and how engaging students in the design process can help to develop this skill.

VII. Guest Presentation – CS4CLE – Addressing Teacher Capacity in Computer Science Member of CS4CLE (a computer science for all initiative) spoke to the committee about their work to build teacher capacity in computer science at Cleveland Metro Schools. Chelsey Cook-Kohn, principal of John Marshall IT High School (JMIT), described their work as a "Learning Laboratory" for developing teacher capacity. At JMIT, computational thinking is threaded through all grade levels and courses, providing all students access to the computer science (CS) pipeline and careers. She explained that computer science is a *literacy* issue for today's students. The CS4CLE group suggested that the Cleveland work could be used as a model for other schools and districts. Currently their work focus is at the high school level, but there are plans to expand to K-8. Dr. Debbie Jackson from Cleveland State University (CSU) described the training program they offered for this project. Jake Taylor from TEALS (Technology Education and Literacy in Schools) spoke to the committee about their partnership with Cleveland Metro Schools to support teachers in offering high school and AP Computer Science courses.

Following the presentation, committee members engaged the CS4CLE team and others in a conversation around teacher preparation for computer science. Dr. Nigamanth Sridhar from Cleveland State University put forth the question "How can we build teacher capacity in terms of credentialing?" He described how the CSU program prepares current teachers to teach courses in computer science. Dr. Jessica Mercerhill remarked that ways to consider an endorsement are being explored. Chelsey Cook-Kohn stated that they have had good results with their teachers at John Marshall IT, and suggested that those involved keep an open mind when exploring pathways for teachers, to consider how we can build capacity in the teachers we already have. Many states are working on this, so don't "reinvent the wheel." Kelly Gaier-Evans from Battelle remarked that in her conversations with principals, sometimes the teachers who would be best qualified are not always interested in teaching computer science. Dr. Sridhar stated that the real focus of instruction should be the weaving of computer science and computational thinking into the way students think. Chelsey Cook-Kohn remarked that "the issue isn't *if* we needed it, but *how*" [emphasis added].

VIII. Closing Remarks

In his closing remarks, Dr. Schwieterman spoke about the need for computer science education –he stated that his company is investing in their ability to deliver health care in Ohio, but they may have to put their software development team in another state because there are not enough qualified people in Ohio to do what is needed.

IX. Adjournment

Dr. Jessica Mercerhill moved to adjourn the meeting, seconded by Mr. Paolo DeMaria.

The meeting adjourned at 11:40 a.m.